IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Emil D. KAKKIS

Art Unit: 1652

Application No.: 09/993,241

Examiner: Not yet assigned

Filed: November 13, 2001

Attorney Docket No: 00800.0051.CNUS03

For: **METHODS FOR TREATING DISEASES CAUSED BY DEFICIENCIES OF RECOMBINANT α-L-IDURONIDASE**

Second Supplemental Information Disclosure Statement

Commissioner for Patents
Washington, D.C. 20231

Sir:

Listed on accompanying Form PTO-1449 are documents that may be considered material to the examination of this application, in compliance with the duty of disclosure requirements of 37 C.F.R. §§ 1.56, 1.97 and 1.98.

In the examination of the claims of the parent application (Ser. No. 09/439,923), there was only one rejection based on prior art: a 35 U.S.C. §103 rejection of the claims over WO 93/10244. In that application, claims directed to a purified human recombinant α-L-iduronidase having a purity of greater than about 99% have been allowed. In the Notice of Allowability, dated March 21, 2002, the Examiner states:

> ". . . Examiner could not find a reference that either teaches a 99% pure recombinant alpha-L-iduronidase enzyme or even makes it obvious for one skilled in the art to make a 99% pure recombinant alpha-L-iduronidase. Most references in the art teach either pure or "high purity" alpha-L-iduronidase without specifying a per cent purity."

Applicant respectfully submits that the references submitted in the attached Form PTO-1449 do not affect the patentability of the claims in this present application and believes the references are cumulative to those already of record in this and the '923 application. The

references cited herein are being submitted for the sake of completeness of the record in this application file. Clements, *et al.*, "Immunopurification and characterization of human α-L-iduronidase with the use of monoclonal antibodies", *Biochem. J.* Vol. 259, pp. 199-208 (1989) disclose the immunopurification, by immunoaffinity chromatography, of non-recombinant α-L-iduronidase from human liver to a purity of 80% consisting of two forms of α-L-iduronidase composed of seven polypeptides. Kakkis, *et al.*, "Overexpression of the human lysosomal enzyme α-L-iduronidase in Chinese Hamster Ovary cells", *Prot. Exp. Purif.* Vol. 5, pp. 225-232 (1994) disclose the purification, by sequential chromatography, of recombinant α-L-iduronidase from CHO cells, but do not disclose purifying it to a purity of 99% or more. Scott, *et al.*, "Chromosomal localization of the human α-L-iduronidase gene (IDUA) to 4p16.3" *Am. J. Hum. Genet.* Vol. 47, pp. 802-807 (1990) disclose the immunopurification, by immunoaffinity chromatography, of non-recombinant α-L-iduronidase from human-mouse cell lines, but do not disclose purifying it to a purity of 99% or more. Zhao, *et al.*, "Carbohydrate structures of recombinant human α-L-iduronidase secreted by Chinese Hamster Ovary cells", *J. Biol. Chem.* Vol. 273, No. 36, pp. 22758-22765 (1997) disclose the immunoprecipitation of recombinant α-L-iduronidase from CHO cells, but do not disclose purifying it to a purity of 99% or more. None of the above identified references teach or suggest either (1) purified human recombinant α-L-iduronidase having a purity of greater than about 99%, or (2) that purified human recombinant α-L-iduronidase having a purity of greater than about 99% has an advantage in treating subjects suffering from a disease caused by a deficiency of α-L-iduronidase.

Therefore, Applicant contends that, in light of the allowability of the claims directed to a purified human recombinant α-L-iduronidase having a purity of greater than about 99% (in the parent application, Ser. No. 09/439,923), the present claims (which include the limitation of "a recombinant α-L-iduronidase enzyme or biologically active fragments or mutant thereof with a purity of equal to or greater than 99%") are also patentable over the prior art.

Where the publication date of a listed document does not provide a month of publication, the year of publication of the listed document is sufficiently earlier than the effective U.S. filing date and any foreign priority date so that the month of publication is not in issue. Applicant has listed publication dates on the attached PTO-1449 based on information presently available to the

undersigned. However, the listed publication dates should not be construed as an admission that the information was actually published on the date indicated.

Applicant reserves the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered.

This statement should not be construed as a representation that a search has been made, or that information more material to the examination of the present patent application does not exist. The Examiner is specifically requested not to rely solely on the material submitted herewith. It is further understood that the Examiner will consider information that had been cited by or submitted to the U.S. Patent and Trademark Office in a prior application relied on under 35 U.S.C. § 120. 1138 OG 37, 38 (May 19, 1992).

Applicant has checked the appropriate boxes below.

■ 1. This Information Disclosure Statement is being filed within three months of the U.S. filing date OR before the mailing date of a first Office Action on the merits. No statement under 37 C.F.R. § 1.97(e) or fee is required, or

□ 2. This Information Disclosure Statement is being filed more than three months after the U.S. filing date AND after the mailing date of the first Office Action on the merits, but before the mailing date of a Final Rejection or Notice of Allowance, or action that otherwise closes prosecution in the application, and

□ a. I hereby state that each item of information contained in this Information Disclosure Statement was cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1), or

□ b. I hereby state that no item of information in this Information Disclosure Statement was cited in any communication from a foreign patent office in a counterpart foreign application, and, to my knowledge after making reasonable inquiry, no item of information contained in this Information

Disclosure Statement was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2), or

☐ c. Attached is our Check No. _____ in the amount of $ _____ in payment of the fee under 37 C.F.R. § 1.17(p).

☐ 3. This Information Disclosure Statement is being filed more than three months after the U.S. filing date and after the mailing date of a Final Rejection or Notice of Allowance, but on or before payment of the Issue Fee. Attached is our Check No. _____ in the amount of $ _____ in payment of the fee under 37 C.F.R. § 1.17(i), and

☐ a. I hereby state that each item of information contained in this Information Disclosure Statement was cited in any communication from any foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1), or

☐ b. I hereby state that no item of information in this Information Disclosure Statement was cited in any communication from a foreign patent office in a counterpart foreign application, and, to my knowledge after making reasonable inquiry, no item of information contained in this Information Disclosure Statement was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2).

☐ 4. Relevance of the non-English language document(s) is discussed in the present specification.

☐ 5. The document(s) was/were cited in a corresponding foreign application. An English language version of the foreign search report is attached for the Examiner's information.

☐ 6. A concise explanation of the relevance of the non-English language document(s) appears below:

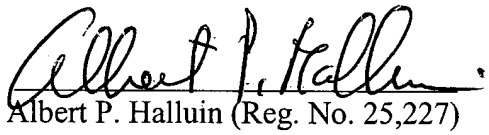
☐ 7. The Examiner's attention is directed to co-pending U.S. Patent Application No. _____, filed _____, which is directed to related technical subject matter. The identification of this U.S. Patent Application is not to be construed as a waiver of secrecy as to that application now or upon issuance of the present application as a patent. The Examiner is respectfully requested to consider the cited application and the art cited therein during examination.

■ 8. Copies of the documents were cited by or submitted to the Office in Application No. 09/711,205, filed November 9, 2000, which is relied upon for an earlier filing date under 35 U.S.C. § 120. Thus, copies of these documents are not attached. 37 C.F.R. § 1.98(d).

It is respectfully requested that the Examiner initial and return a copy of the enclosed PTO-1449, and to indicate in the official file wrapper of this patent application that the documents have been considered.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 08-3038 referencing docket number 00800.0051.CNUS03.

Respectfully submitted,



Date: May 10, 2002

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